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Spectrograms of the middle and outer corona, obtained with a relatively wide slit and low dispersion, record the Fraunhofer lines but faintly. A spectrogram of good strength would probably be difficult and uncertain in interpretation, as the slit of the spectrograph would receive light from streamers which radiate in a variety of directions from the Sun. Recalling that a reflecting particle moving directly from the Sun toward the observer will not displace the spectrum lines at all; that a reflecting particle moving directly away from, or directly toward, both Sun and observer, will give double displacement of the lines toward the red or toward the violet, respectively; and that the coronal light falling upon the slit is from particles possessing a great variety of motions between these limits; the complexity of the result is evident.

All the spectrographic measures of motion within the shallow gaseous stratum giving the bright lines are likewise in accord with ARRHENIUS'S theory.

March, 1907.

W. W. CAMPBELL,
C. D. PERRINE.

NOTE ON A DISTURBED REGION IN THE CORONA OF AUGUST 30, 1905.[1]

The large-scale photographs of the corona of August 30, 1905, secured by the Crocker expeditions to Spain and Egypt, show an extensive region in the southeast quadrant composed of prominent streamers which appear to radiate from a common point. The space-form of this region seems to be approximately conical. The apex of the cone, projected upon the photographic plate, is some distance within the Sun's limb. The apex no doubt is in or near the photosphere, and the apparent axis of the cone is directed radially out from the Sun's edge. This conical volume is similar to but not so prominent as that recorded in the corona of May 18, 1901.

The chromospheric layer in the region crossed by these projected streamers is not very deep, nor does it show special activity. The streamers probably originate far from the limb; but whether on the nearer or further hemisphere of the Sun is uncertain. The estimated points of intersection of the streamers (produced) were marked on the glass side of the Spanish negatives, Nos. 2 and 7, which were exposed at about 8^s and $3^m\ 16^s$, respectively, after the beginning of totality.

[1] From *Lick Observatory Bulletin*, No. 115.

The positions of these points were measured independently by the writers, as follows:

	Position angle from Moon's center.	Distance from Moon's limb.	Observer.
Negative No. 2	131½°	3′.24	W. W. C.
Negative No. 7	133½	3 .24	W. W. C.
Negative No. 2	132	2 .97	C. D. P.
Negative No. 7	132½	3 .11	C. D. P.

Referring these positions to the center of the Sun we have:—

Co-ordinates of Apex of Disturbed Area.

	Position angle from Sun's center.	Distance from Sun's center.	Observer.
Negative No. 2	134°	12′.78	W. W. C.
Negative No. 7	131½	13 .68	W. W. C.
Negative No. 2	134	12 .51	C. D. P.
Negative No. 7	131	13 .98	C. D. P.

An examination of the photographs of the Sun taken at Mt. Hamilton on this date shows a spot of medium size, surrounded by faculæ, in the southeast quadrant, near the Sun's limb. The following position was determined from the negative exposed at 4^h 49^m G. M. T., August 30th, or 3^h 34^m after the coronal photographs were made in Spain.

Position angle of spot..... 140°
Distance from Sun's center..... 12′.67

The series of photographs of the Sun taken at Mt. Hamilton for study in connection with eclipse problems extends from August 23d to September 11, 1905, inclusive. During this interval there was no other spot in the southern hemisphere.

The lack of agreement in position of the apex of the disturbed region and the sun-spot at the time of the eclipse, taken in connection with the low velocities already found for coronal matter, suggests that an eruption (due to volcanic, radiation-pressure, or other forces) took place at a considerable time previous to the eclipse. It becomes, therefore, of interest to ascertain the position of this spot group when it was on the opposite side of the Sun at about the same distance from the limb as the apex of the disturbance, and also its similar positions an entire revolution before the eclipse. The position-angles of the spot when at 2′.6 from the Sun's eastern limb have been determined as follows:—

1905.	July 28	122°	Farther side of Sun.
	Aug. 3	132½	Nearer side of Sun.
	Aug. 24	129½	Farther side of Sun.
	Aug. 30	140	Nearer side of Sun.

It is a question whether such disturbances of coronal matter have their origin in sun-spots or in the faculæ surrounding the spots. It would be interesting to know the times of greatest activity of the spot group in question, but the history of its development is not known to us. The most probable date of the disturbance was August 3d, when the sun-spot was on the nearer side of the Sun. On that date the spot had the same position as the apex. On August 24th, with the spot on the farther side of the Sun, the position-angles of the spot and apex differed 3°.

The form of structure within the disturbed region may be divided roughly into two classes: long, slightly curved streamers, and flocculent masses. The streamers contain no condensations or other details of structure capable of accurate measurement, as a basis for determining the velocities of the matter composing them. If the forms of the streamers are functions of the velocities within them, as considered by Professor SCHAEBERLE, the speed in question would be as great as several hundred miles per second.

A determination of the velocities of some of the flocculent masses near the limb, on the assumption that August 3d was the date of their ejectment, gives a value of 700 feet per second as the minimum radial speed. The masses farther from the limb would require velocities perhaps five times as great in order to carry them to their positions at the time of the eclipse. These results are in accordance with the conclusions based on velocity determinations during the interval of seventy minutes between the occurrence of the eclipse in Spain and Egypt. This determination showed that the velocity of the flocculent masses could not have been over one mile per second.

April, 1907.

W. W. CAMPBELL,
C. D. PERRINE.

RESULTS OF THE SEARCH FOR AN INTRAMERCURIAL PLANET AT THE TOTAL SOLAR ECLIPSE OF AUGUST 30, 1905.[1]

Owing to the existence of thin clouds during the eclipse of 1901 in Sumatra, the search for an intramercurial planet was

[1] Abstract from *L. O. Bulletin*, No. 115.